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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,092

05/03/2006

Tetsuo Nishida

TAM-062

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20374 7590 07/08/2009
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EXAMINER

WILLS, MONIQUE M

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

07/08/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,092	Applicant(s) NISHIDA ET AL.	
	Examiner Monique M. Wills	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 May 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed April 22, 2009. The rejection of claims 1-9 under 35 U.S.C. 103(a) as being unpatentable over Sato U.S. Pub. 2007/0031729 (as WO 02/076924) in view of Murai et al. U.S. Pat. 7,097,944 is maintained.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato U.S. Pub. 2007/0031729 (as WO 02/076924) in view of Murai et al. U.S. Pat. 7,097,944.

With respect to **claim 1**, Sato teaches an electrolytic solution for use in nonaqueous electrolytic cells which contains a room temperature molten salt comprising an aliphatic quaternary ammonium salt of the $\text{NR}^1\text{R}^2\text{R}^3\text{R}^4\text{X}^1$, an organic solvent and a lithium salt of LiX^2 (par. 18) wherein R^1 to R^3 are each a chain hydrocarbon having 1 to 4 carbon atoms (par18), R^4 is methoxymethyl,

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(par. 34), and X^1 and X^2 are each a fluorine-containing anion, such as BF_4 (par. 18).

See the Abstract. With respect tot **claim 2**, the fluorine-containing anions X^1 and X^2 are each a fluorine-containing anion, such as BF_4 tetrafluoroborate (par. 18). With respect to **claim 6**, the electrolyte is employed in a nonaqueous electrolytic lithium secondary cell comprising a positive electrode, negative electrode, separator and a nonaqueous electrolytic solution. See paragraph 158. With respect tot **claim 7**, the fluorine-containing anions X^1 and X^2 are each a fluorine-containing anion, such as BF_4 tetrafluoroborate (par. 18). With respect to **claim 9**, the negative electrode is graphite (par. 158).

Sato does not expressly disclose: vinylene carbonate in an amount of 1 to 5wt% based on the electrolytic solution (**claim 1**); molten salt contained in an amount of 1 to 15wt % (**claims 3-5 & 8**).

Murai teaches that it is well known to add VC to electrochemical cells in a weight percent of 1 wt% in order to in order to increase charge discharge characteristics of a cell. See Example 1 and paragraphs 83 and 94.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made to employ the vinylene carbonate in an amounts of 1 wt% as taught by Murai, in the electrolyte of Sato, in order to improve charge discharge characteristics.

Response to Arguments

Applicant's arguments with respect to claims 1-9 have been considered but are not persuasive. Applicant asserts that the combination of Sato and Murai does not support a case of prima facie obviousness. Specifically, Murai does not teach a quaternary salt, thus the skilled artisan could not have reasonably predicted the results of using vinylene carbonate of Murai in Sato. This argument is not persuasive, as the obviousness of employing VC of Murai in the electrode of Sato does not depend on whether Murai teaches a quaternary salt. Murai was relied upon to show the conventionality of employing VC solvents in similar electrochemical environments. The motivation for combining the references does not have to achieve the same results set forth by Applicant. The selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). Additionally, Applicant asserts that Murai teaches against the use of VC in Sato, because the excellent effect is obtained with a combination of VEC and VC added to the lithium salt. This argument is not persuasive, as the reference was relied on to show the conventionality of employing VC in similar electrochemical environments. Applicant points to Table 1, Examples 1 to 7 showing that capacity retention is 72 to 85% when both VC and VEC are used. This argument is not persuasive, as superior capacity retention is also attained when VEC is used alone. See Examples 8-15. Therefore, VEC and VC do not have to be used in combination to achieve the superior results. Notwithstanding that fact, the reference

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was relied upon to show that it is well known in the art to employ VC electrolytes. A teaching of VC in combination with other organic solvents does not teach against Sato. Sato teaches common solvents such as ethylene carbonate (par. 59), and Murai teaches adding VC to common solvents such as ethylene carbonate. See Table 2.

With respect to the criticality of VC in and amount of 1 to 5%. First, the combination of Sato and Murai teaches VC in an amount of 1% (See Table in Murai). Second, the evidence of superior properties is not persuasive. In Table 2, 3 comparative examples illustrate VC. In Com. Ex. 6, VC constitutes 10% of the electrolyte, twice as much claimed and the capacity retentivity is superior, at 93%. In Com. Ex. 7, VC is 5% within the instant range and the capacity retentivity is 45%. There is only one data point, com. Ex. 8, wherein VC outside of the claimed range has a low capacity of retentivity of 70.3%. However, as previously stated, the other comparative examples have inconsistent results. If VC in the amount of 1 to 5% is critical, it is unclear as to how VC of 5% in com. ex. 7 produces inferior results, but VC of 10% produce superior results (com. ex. 6). Stated differently, the comparative result with the range is inferior to the comparative result outside the claimed range. The data in Table 2 relied upon by Applicant does not appear to show criticality with respect to the instant range.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Patrick Ryan, may be reached at 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Monique M Wills/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795